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(54) **METHOD FOR CORRELATING AN ELECTRONIC MAIL MESSAGE WITH RELATED MESSAGES**

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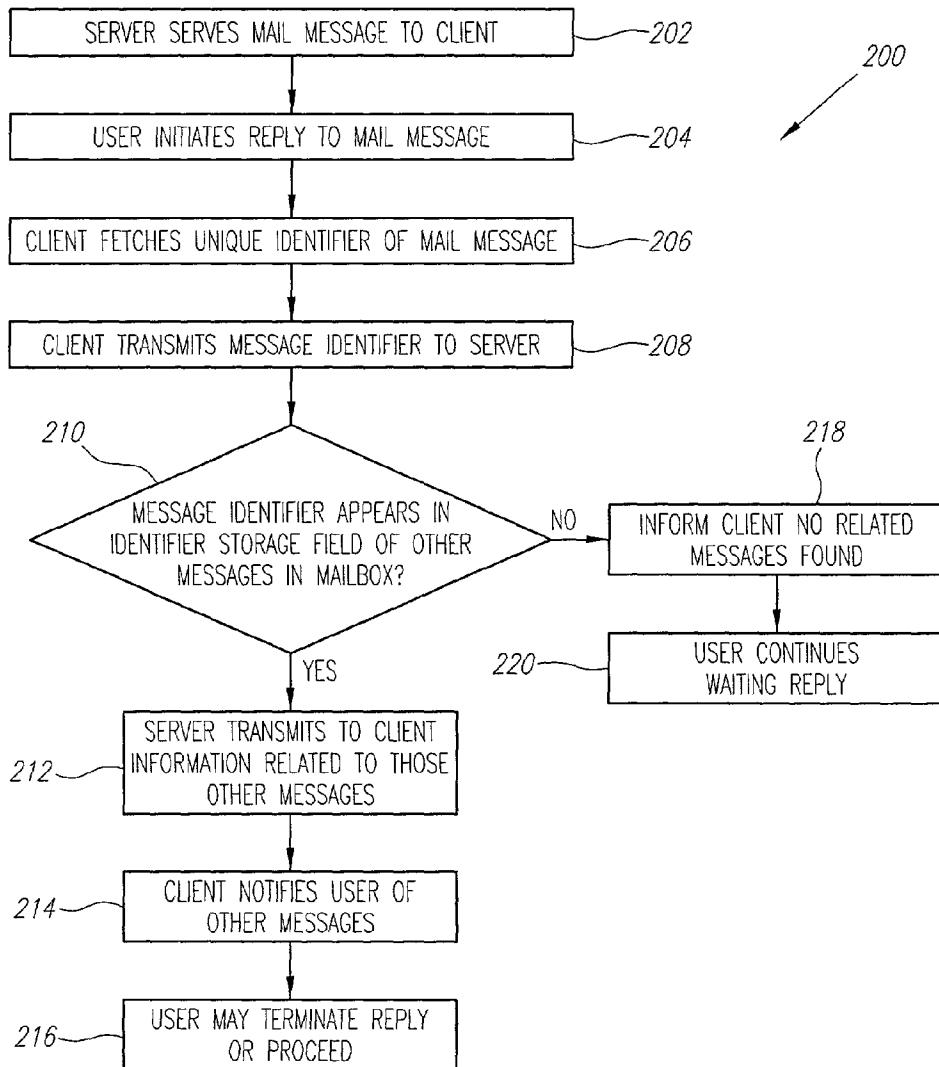
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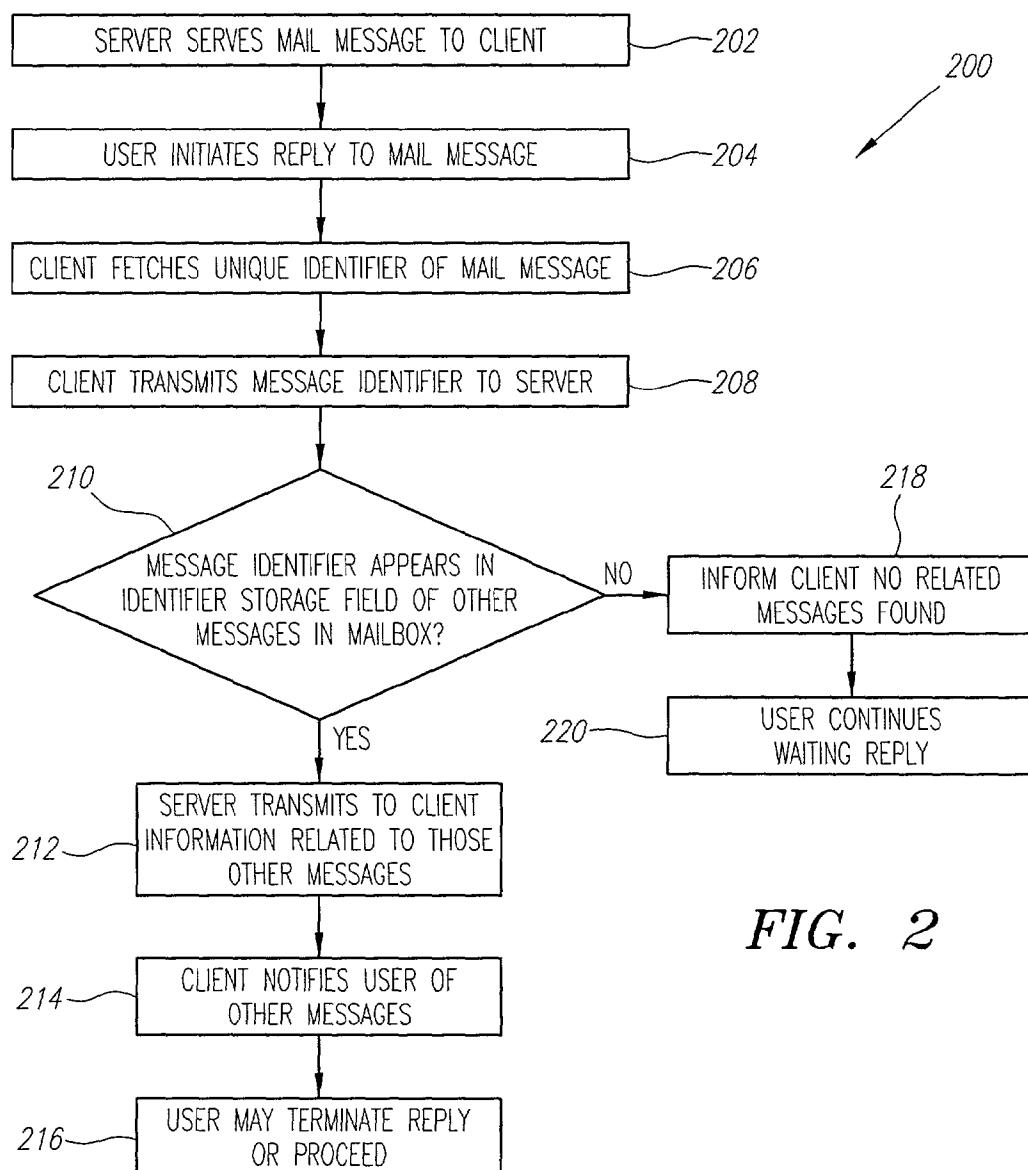
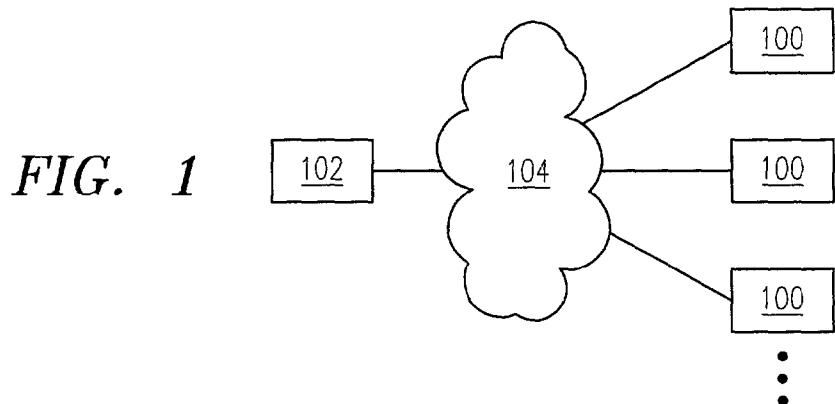
(57) ABSTRACT

A method for correlating an electronic mail message with related (e.g., reply or forwarded) electronic mail messages is disclosed. When a user initiates a reply to an electronic mail message on an electronic mail system, the system checks for reply or other (e.g., forwarded) messages which are related to the original electronic mail message and are received by the user at a later time.

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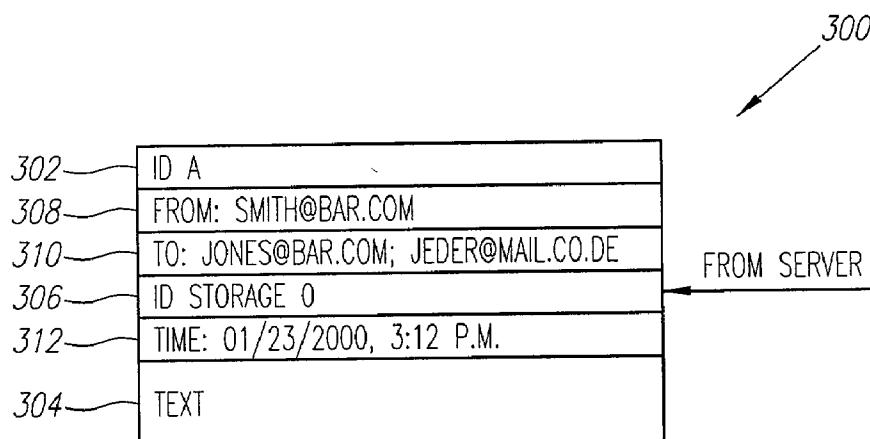


FIG. 3

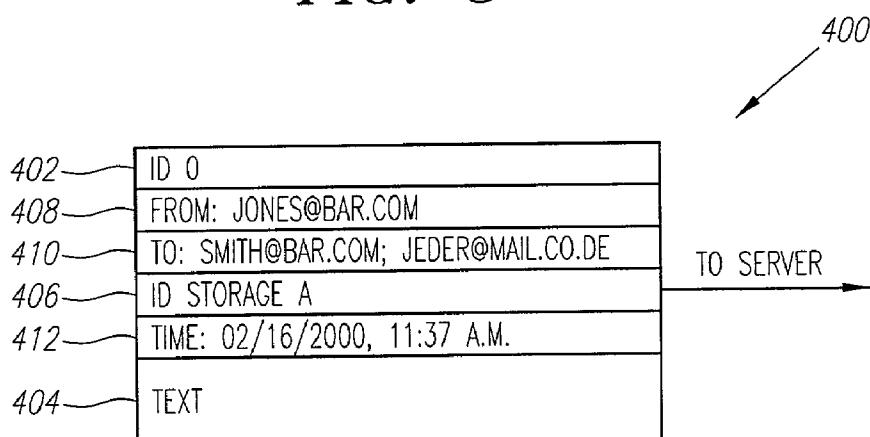


FIG. 4

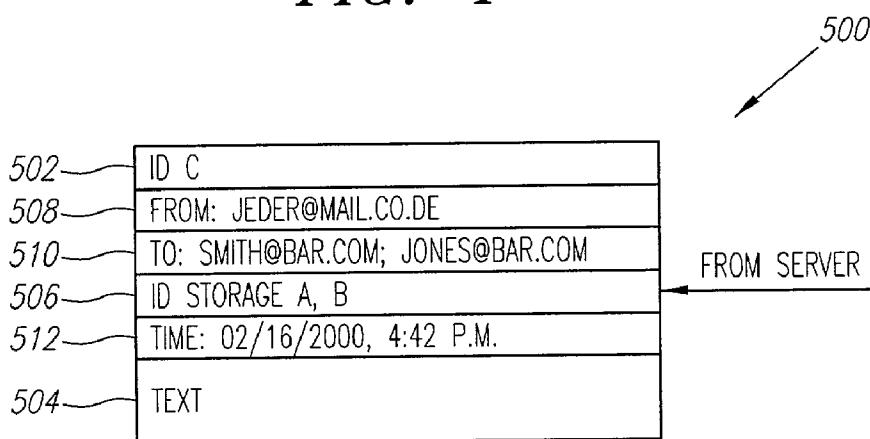


FIG. 5

METHOD FOR CORRELATING AN ELECTRONIC MAIL MESSAGE WITH RELATED MESSAGES

FIELD OF THE INVENTION

[0001] The present invention relates to electronic mail messaging, and more specifically to, correlating an electronic mail message with related electronic mail messages (e.g., replies and forwards).

BACKGROUND OF THE INVENTION

[0002] Electronic mail is a popular way for people to send messages to one another. Common and accepted protocols such as Post Office Protocol (POP) and Simple Mail Transfer Protocol (SMTP) are used to handle electronic mail messages across a communications network. A typical electronic mail system includes one or more clients connected to a first server, and one or more other servers connected to that first server. Using protocols such as POP and SMTP, electronic mail messages are transferred between servers as well as between a client and its corresponding server.

[0003] An electronic mail message typically includes one or more header fields and a message body attached to those header fields. The header fields may include a "from" field identifying the sender, a "to" field identifying the recipient, a date sent field, and fields for other data. The message body may include ASCII text, text in hypertext markup language (HTML) form, data corresponding to a graphical icon representing an attachment, or other message data. One or more attachments may also form part of the electronic mail message, and may be attached to the end of the message after the message body. A mail server for handling electronic mail messages typically assigns each message received by that server a unique identifier. Electronic mail messages typically are transmitted from a mail server to a client program upon request by an authorized user, or automatically when received by the server.

[0004] If the user wishes to send a response to a particular electronic mail message, he or she typically can select a reply option offered by the mail client. The generation of the reply message is typically handled on the client side. The mail client copies the contents of the "from" field from the original message into the "to" field of the reply message, and may also copy the subject line and the body of the message. The mail client may also add a phrase or text element such as "RE:" or "REPLY:" to the beginning of the subject line of the reply message, and/or highlight the original text with carets or other symbols. If the original message was sent to a number of people, as is common in a business environment, the user may wish to reply to all of them. Typically, the user may do so by selecting a "reply to all" feature on the client side, in which case the contents of both the "from" field and the "to" field of the original message are copied into the "to" field of the reply message.

[0005] The popularity of electronic mail has resulted in a high volume of electronic mail messages. A given person routinely may receive thirty or more electronic mail messages in a single day. If that person is at a computer throughout the day, this volume of mail can be handled easily. However, if that person takes a vacation, or is out of the office, for several days or weeks, electronic mail messages can build up and form a large backlog. As the user works through these messages, he or she may reply to one

of them, only to find that a later, as-yet-unnoticed message from the original sender or from another recipient of the original message made it unnecessary to reply. For example, a person in an accounting department at a company may send out an electronic mail message to other people in the accounting department, requesting information about a transaction. An electronic mail user who has been on vacation may reply to that message with that information, only to find that another member of the department has already provided that information, and sent it out to all of the recipients of the original message. Thus, when a user has a large backlog of electronic mail messages, he or she may waste time replying to messages when those replies are unnecessary.

SUMMARY OF THE INVENTION

[0006] Embodiments of the present invention provide a method for correlating an electronic mail message with related (e.g., reply or forwarded) electronic mail messages. When a user initiates a reply to an electronic mail message on an electronic mail system, the system checks for reply or other (e.g., forwarded) messages which are related to the original electronic mail message and are received by the user at a later time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a schematic view of an electronic mail server connected to a number of clients via a communications network.

[0008] FIG. 2 is a flow chart illustrating a method for determining whether other messages in a user's mailbox are later-composed replies to a particular message selected by the user.

[0009] FIG. 3 is a pictorial representation of relevant components of an electronic mail message received by an electronic mail client from a server.

[0010] FIG. 4 is a pictorial representation of relevant components of an electronic mail message composed as a reply to the message of FIG. 3, as prepared for transmission to the server.

[0011] FIG. 5 is a pictorial representation of relevant components of an electronic mail message received, in reply to the message of FIG. 4, by an electronic mail client from the server.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0012] In preferred embodiments of the present invention, a method is provided for correlating an electronic mail message with related (e.g., reply or forwarded) electronic mail messages. When a user initiates a reply to an electronic mail message on an electronic mail system, the system checks for reply or other (e.g., forwarded) messages which are related to the original electronic mail message and are received by the user at a later time.

[0013] Referring to FIG. 1, one or more electronic mail clients 100 are connected to a mail server 102 via a communications network 104 such as a local or wide area network, the Internet, or the like. The electronic mail clients 100 are software programs for reading, writing and other-

wise handling electronic mail messages. Each client **100** may be a commercial program such as Microsoft Outlook or Eudora, a free or open-source program, a feature of a larger or more comprehensive software program or package, or any other software or instructions adapted to handle electronic mail messages. The individual electronic mail clients **100** need not be the same software program. The electronic mail clients **100** each run on an information handling system, such as a general purpose computer, Internet appliance, personal digital assistant (PDA) or other information handling system capable of connecting to the electronic mail server **102**. Different clients **100** may run on different kinds of information handling systems. The type of information handling system on which each client **100** runs is not critical to the invention. While three clients **100** are shown in FIG. 1, less than three clients **100** or more than three clients **100** may be connected to the server **102** at the same time. In a preferred embodiment, the connections between each individual client **100** and the server **102** are temporary, and are terminated after communication between each client **100** and the server **102** is completed. However, these connections may be persistent or permanent if desired. The server **102** may be a single information handling system, or may be a plurality of information handling systems connected together. The relationship between the server **102** and each client **100** is preferably a standard client/server network relationship. Although FIG. 1 shows a single mail server **102**, a plurality of mail servers **102** preferably are connected to one another over a communications network **104** such as the Internet via standard physical connections and protocols, such as POP and/or SMTP. In this way, people at widely disparate locations using different mail servers may send and receive electronic mail messages from one another.

[0014] Referring as well to FIG. 2, a method **200** for replying to an electronic mail message is shown. As background for the method **200**, several pictorial depictions of exemplary electronic mail messages are shown in FIGS. 3-5. FIG. 3 is a pictorial representation of an electronic mail message **300** served by a mail server **102** to a client **100**. The electronic mail message **300** is preferably served from a mailbox on the mail server **102**, where the mailbox is uniquely associated with the user. The mailbox stores electronic mail messages sent to the user, then serves those messages or copies thereof to the client **100** automatically or upon request. The use of a mailbox on a server **102**, where that mailbox is associated with a particular user, is standard. The electronic mail message **300** includes a unique identifier field **302**, a text field **304**, an identifier storage field **306**, a "from" field **308**, a "to" field **310**, and a time field **312**. The electronic mail message **300** may include additional fields. The text field **304** includes the text that forms the body of the message **300** transmitted to the user. The client **100** preferably allows for the selection of a particular message **300** and the subsequent display of that message **300** to a user, as is standard. The unique identifier field **302** preferably includes a single unique identifier assigned by the mail server **102** that serves the message **300** to the client **100**. The assignment of such a unique identifier is part of, for example, the POP protocol. The unique identifier is preferably an alphanumeric string. As an example, the unique identifier "A" is stored in the unique identifier field **302** of the electronic mail message **300**. While the unique identifier "A" is used here for simplicity, actual unique identifiers are typically substantially longer, to ensure that unique identifiers can be

generated quickly and easily. The electronic mail message **300** includes in the "from" field **308** the electronic mail address of the person or entity transmitting the electronic mail message **300**. As an example, if the sender is Smith, having an electronic mail address of "smith@bar.com," that address appears in the "from" field **308**. Similarly, the "to" field **310** contains the electronic mail address or addresses of the people or entities to which the electronic mail message **300** is sent. As an example, if Jones and Jeder are the recipients of the message, the "to" field **310** includes their electronic mail addresses of "jones@mail.com" and "jeder@mail.co.de." The time field **312** preferably includes the time and date when the message **300** was sent to the recipient.

[0015] Referring as well to FIG. 4, the client **100** generates a reply message **400**. The reply message "from" field **408** contains the electronic mail address of the user, which is preferably inserted automatically by the client **100**. The client **100** inserts the contents of the "from" field **308** of the original electronic mail message **300** into the "to" field **410** of the reply message **400**. Optionally, the client **100** also may fill the "to" field **410** of the reply message **400** with the contents of the "to" field **310** of the original electronic mail message **300**, so that the reply message **400** can be used to reply to every user who has seen the original electronic mail message **300**. The client **100** may insert the text field **304** of the original message **300** into the text field **404** of the reply message **400**, if desired. The reply message unique identifier field **402** is preferably blank, or contains a null character, because the unique identifier is preferably assigned by a mail server **102**, not the client **100**, as part of a protocol such as POP. The client **100** writes to the reply message identifier storage field **406** the contents of the unique identifier field **302** of the original message **300**, in order to designate that the reply message **400** is a reply to the specific original message **300**. The reply message **400** is then transmitted to the mail server **102** for forwarding to the electronic mail addressees identified in the "to" field **410**. The time the reply message **400** is sent is written to the time field **412**.

[0016] The server **102** then handles the reply message **400** according to standard protocols. For example, if the reply message **400** is addressed to another user associated with the server **102**, then the reply message **400** is routed to that user's mailbox on the server **102**, and the server **102** assigns that message a unique identifier. As another example, if the reply message **400** is addressed to a user associated with a second server, the reply message **400** is routed to the second server, which then transmits the reply message **400** to the user's mailbox and assigns that message a unique identifier. As illustrated by this example, standard mail protocols require the receiving server to assign each electronic mail message a unique identifier. As an example, when the reply message **400** is received at the second server **102** having a mailbox for Jeder, that second server **102** assigns the reply message **400** a unique identifier "B".

[0017] A recipient of the reply message **400** may send a reply to the reply message **400**, which is generated by a mail client **100** as described above with regard to the creation of the reply message **400**. Such a third message **500** is routed to the mailbox of the creator of the reply message **400** and served to the client **100** associated with that user. The third message **500** is assigned a unique identifier "C" by the server **102** when it arrives in the mailbox of the user, and "C" is

written to the unique identifier field **502** of the third message **500**. The third message identifier storage field **506** includes identifiers “A” and “B”. The identifier “B” was added to the third message identifier storage field **506** when Jeder initiated the third message **500** in response to the reply message **400** having the unique identifier “B” stored in its unique identifier field **402**. The third message **500** also includes a text field **504**, a “from” field **508**, a “to” field **510**, and a time field **512** indicating the time the third message **500** was sent.

[0018] Turning to the method **200**, in step **202**, a mail server **102** serves an electronic mail message to a client **100**. Serving an electronic mail message from a server to a client **100** is standard, and may be accomplished via POP, SMTP or other mail protocols. The server **102** may serve the electronic mail message to the client **100** automatically, or at the request of the client **100**.

[0019] Next, in step **204**, the user initiates a reply to the electronic mail message received in step **202**. The initiation of a message may be any input by which the user indicates that he or she wishes to send a reply message. For example, the user may click on an icon or button generated by the client **100** in the context of a graphical user interface, where that icon or button is associated with the initiation of a reply to a selected electronic mail message. Preferably, the reply message is not immediately created; rather, the steps of the method **200** described below are performed first. In another embodiment, initiation of a reply message in this step results in the creation of a reply message by the client **100**, as described above in regard to the creation of the reply message **400**.

[0020] Next, in step **206**, the client **100** fetches the contents of the unique identifier field of the electronic mail message that the user selected for reply in step **204**. For example, if the user selected the electronic mail message **300** to create a reply, the client **100** fetches the contents of the unique identifier field **302**, which in this example is “A”. The client **100** may fetch the contents of the unique identifier field by copying its contents to a register or memory storage unit, or by performing a different standard data retrieval operation.

[0021] Next, in step **208**, the client **100** transmits to the server **102** the unique identifier fetched in step **206**, as well as the username or other descriptor associated with the user. When the server **102** receives this data, the method **200** proceeds to step **210**. In step **210**, the server **102** searches all electronic mail messages present in the user’s mailbox on the server **102**, to determine whether the identifier transmitted to the server **102** in step **208** is present in the identifier storage field of one or more of the electronic mail messages stored in the user’s mailbox. The particular mailbox to be searched is identified with the username or other descriptor transmitted to the server **102** in step **208**. The unique identifier fetched in step **206** and transmitted to the server **102** in step **208** preferably is stored temporarily in the server **102**, in a structure such as a register or other memory storage apparatus. The comparison of the unique identifier to the contents of each electronic mail message stored in the user’s mailbox may be performed with standard methods.

[0022] If one or more messages in the user’s mailbox have an identifier storage field that contains the unique identifier fetched in step **206**, then the server **102** may take one or more actions. First, the server **102** may simply count those

electronic mail messages, storing the count in a register or other memory storage apparatus. Second, the server **102** may instead, or in addition, store the unique identifier of each such electronic mail message that is present in the user’s mailbox. Third, the server **102** may instead, or in addition, store the time information contained in the time field of each such electronic mail message that is present in the user’s mailbox. By storing the time information of each electronic mail message in the user’s mailbox that contains the unique identifier fetched in step **206** in its identifier storage field, the server **102** may sort those messages by time sent and determine which of those messages is the latest to be transmitted. Other data may be collected or utilized by the server **102** to analyze the electronic mail messages in the user’s mailbox containing the identifier fetched in step **206** in the identifier storage field.

[0023] Next, if any messages are present in the user’s mailbox having the identifier fetched in step **206** in the identifier storage field, the process proceeds to step **212**. In step **212**, the server **102** transmits to the client **100** information relating to the electronic mail messages in the user’s mailbox that have in their identifier storage fields the identifier fetched in step **206**. The particular information transmitted in step **212** is related to the information derived in step **210**. For example, in one embodiment, the server **102** transmits to the client **100** the number of messages in the user’s mailbox that include in their identifier storage fields the unique identifier transmitted to the server in step **206**. As another example, the server **102** may transmit to the client **100** the unique identifier of the most recent message in the user’s mailbox having in its identifier storage field the unique identifier fetched in step **206**—that is, the unique identifier of the latest message in reply to the electronic mail message selected in step **204**.

[0024] Next, in step **214**, the client **100** notifies the user that related messages are present in the user’s mailbox, based on the information transmitted to the client **100** from the server **102** in step **212**. The client **100** may provide such notification in a number of ways. As one example, the client **100** may display a dialog box or other alert indicating the number of messages already present in the user’s mailbox that are replies to the message selected by the user in step **204**. As another example, the client **100** may highlight to the user electronic mail messages stored in the client **100** that already have been sent in reply to the message selected by the user in step **204**. As yet another example, the client **100** may open the latest (i.e., most recent) message sent in reply to the message selected by the user in step **204**. The client **100** may otherwise present information to the user relating to the presence and/or number of electronic mail messages in the user’s mailbox that have been sent in reply to the message selected by the user in step **204**. Finally, in step **216**, the user may consider the information displayed in step **214** and decide whether to proceed with the reply to the message selected in step **204**. The user may proceed with that reply if desired, or terminate or otherwise delete that reply.

[0025] Returning to step **210**, if no messages in the user’s mailbox contain the identifier fetched in step **206** in the identifier storage field, the process proceeds from step **210** to step **218**. In step **218**, the server **102** transmits a message to the client **100** that no electronic mail messages present in the user’s mailbox contain the identifier fetched in step **206** in the identifier storage field. Finally, in step **220**, the user

may continue with a reply to the message selected in step 204. Preferably, the user is not notified of the transmission received from the server 102 in step 218, in order to simplify the process of composing a reply message. However, if desired, the user may be notified in step 220 that no replies have been received to the message selected in step 204.

[0026] In an embodiment described above, electronic mail messages to the user are retained in the user's mailbox at the server 102, and copies of those messages are served to the client 100. In another embodiment, the electronic mail messages are served to the client 100, and are not stored in the server 102. This embodiment may be referred to as a client-side embodiment. As a result, in this embodiment several steps in the method 200 are performed differently than described above, although the principles are the same. Step 208 is omitted; the unique identifier fetched in step 206 from the electronic mail message is not transmitted to the server 102. Rather, in step 210, the client 100 compares that unique identifier fetched in step 206 to the identifier storage field of each electronic mail message stored in the client 100, because the messages are stored on the client side rather than the server side. Steps 212 and 218 are omitted, as there is no need to transmit data to the client 100 from a server 102; the client 100 itself performs the comparison of the unique identifier to the identifier storage field. In other respects, this embodiment of the method 200 is performed substantially as described above.

[0027] The method 200 may also be utilized in conjunction with a web-based electronic mail system, such as Microsoft's Hotmail. In such an embodiment, the client 100 is typically a web browser such as Netscape's Communicator or Microsoft's Internet Explorer. This embodiment may be referred to as a server-side embodiment. As a result, in this embodiment several steps in the method 200 are performed differently than described above, although the principles are the same. Step 206 is omitted, as the mail message identifier resides in the server 102. In step 208, a message is transmitted to the server 102 from the client 100, indicating that the user wishes to respond to a particular electronic mail message. The identification of the user and of the particular message is inherent in the selection of a message for a reply in a web-based electronic mail system. Further, steps 212 and 214 preferably are combined, because the server 102 preferably notifies the client 100 of related messages by serving the client 100 a web page, applet, or other data for display to the user.

[0028] While the embodiments above have been described in terms of reply messages, it will be apparent that the same method may be applied to messages selected by a user for forwarding. It will also be apparent that forwarded messages may be handled in the same manner, wherein the unique identifier of a mail message may be written to the identifier storage field of a message created as a forward of the original message. By tracking forwarded messages in the same manner as reply messages, the usefulness of the method 200 is enhanced.

[0029] A preferred method for correlating an electronic mail message with related (e.g., reply or forwarded) messages, and many of its attendant advantages, have thus been disclosed. It will be apparent, however, that various changes may be made in the content and arrangement of the steps of the process without departing from the spirit and scope of

the invention, the methods and forms hereinbefore described being merely preferred or exemplary embodiments thereof. Therefore, the invention is not to be restricted or limited except in accordance with the following claims and their legal equivalents.

What is claimed is:

1. A method for responding to an electronic mail message selected by a user, where the user accesses a mailbox adapted to store one or more electronic mail messages, each electronic mail message having a unique identifier and an identifier storage field, the method comprising the steps of:

retrieving the unique identifier of the selected electronic mail message;

searching the mailbox for at least one related electronic mail message having the unique identifier of the selected electronic mail message in the identifier storage field of said related electronic mail message; and

providing information relating to results of said searching the mailbox step.

2. The method of claim 1, further comprising the step of displaying to the user said information relating to said results of said searching the mailbox step.

3. The method of claim 2, wherein said displaying step is executed in response to a request from the user to respond to the selected electronic mail message.

4. The method of claim 1, wherein said information relating to said results of said searching the mailbox step comprises a count of said related electronic mail messages found in said searching the mailbox step.

5. The method of claim 1, wherein said information relating to said results of said searching the mailbox step comprises the unique identifier of each said related electronic mail message found in said searching the mailbox step.

6. The method of claim 1, wherein each electronic mail message further comprises a time field for storing a sent time, and wherein said searching the mailbox step further comprises the step of searching the time field of each said related electronic mail message for a sent time later than the sent time of the selected electronic mail message.

7. The method of claim 6, wherein said information relating to said results of said searching the mailbox step comprises data relating to results of said searching the time field step.

8. The method of claim 6, wherein said searching the mailbox step further comprises the step of determining which said related electronic mail message has a latest sent time in the time field.

9. The method of claim 8, wherein said information relating to said results of said searching the mailbox step comprises data relating to results of said determining step.

10. A method for generating a response to a first electronic mail message received by a user, the first electronic mail message received from a mailbox associated with the user and adapted to store one or more electronic mail messages, each electronic mail message having a unique identifier and an identifier storage field, comprising the steps of:

receiving a request from the user to respond to the first electronic mail message;

retrieving the unique identifier of the first electronic mail message;

receiving information about related electronic mail messages stored in the mailbox and determined to be sent in response to the first electronic mail message based on the unique identifier of the first electronic mail message; and

displaying said information to the user.

11. The method of claim 10, wherein said related electronic mail messages are determined to be sent in response to the first electronic mail message if the unique identifier of the first electronic mail message is stored in the identifier storage field of said related electronic mail message.

12. The method of claim 10, wherein said information displayed to the user comprises a count of said related electronic mail messages.

13. The method of claim 10, wherein said information displayed to the user comprises a listing of said related electronic mail messages, wherein said listing includes at least one of: a sender, a recipient, a subject, a sent time, and a message body.

14. The method of claim 10, further comprising the steps of:

generating a reply electronic mail message to said first electronic mail message, said reply electronic mail message comprising a reply identifier storage field; and storing the unique identifier of the first electronic mail message in said reply identifier storage field of said reply electronic mail message.

15. The method of claim 10, wherein each electronic mail message further comprises a time field for storing a sent time, and wherein said receiving information step further comprises the step of determining which said related electronic mail message has a latest sent time in the time field.

16. The method of claim 15, further comprising the step of highlighting to the user said related electronic mail message having the latest sent time in the time field.

17. The method of claim 15, further comprising the step of opening for the user said related electronic mail message having the latest sent time in the time field.

18. A computer readable medium having embodied thereon a computer program, the computer program being executable by a machine to perform a method for responding to an electronic mail message selected by a user, where the user accesses a mailbox adapted to store one or more electronic mail messages, each electronic mail message having a unique identifier and an identifier storage field, the method comprising the steps of:

retrieving the unique identifier of the selected electronic mail message;

searching the mailbox for at least one related electronic mail message having the unique identifier of the selected electronic mail message in the identifier storage field of said related electronic mail message; and providing information relating to results of said searching the mailbox step.

19. The computer readable medium of claim 18, further comprising the step of displaying to the user said information relating to said results of said searching the mailbox step.

20. The computer readable medium of claim 18, wherein each electronic mail message further comprises a time field for storing a sent time, and wherein said searching the mailbox step further comprises the steps of:

searching the time field of each said related electronic mail message for a sent time later than the sent time of the selected electronic mail message; and

determining which said related electronic mail message has a latest sent time in the time field.

21. A computer readable medium having embodied thereon a computer program, the computer program being executable by a machine to perform a method for generating a response to a first electronic mail message received by a user, the first electronic mail message received from a mailbox associated with the user and adapted to store one or more electronic mail messages, each electronic mail message having a unique identifier and an identifier storage field, comprising the steps of:

receiving a request from the user to respond to the first electronic mail message;

retrieving the unique identifier of the first electronic mail message;

receiving information about related electronic mail messages stored in the mailbox and determined to be sent in response to the first electronic mail message based on the unique identifier of the first electronic mail message; and

displaying said information to the user.

22. The computer readable medium of claim 21, wherein each electronic mail message further comprises a time field for storing a sent time, and wherein said receiving information step further comprises the step of determining which said related electronic mail message has a latest sent time in the time field.

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